Story by Kathy Wythe

Sound surroundings

Programs seek healthy environment for state's rivers, bays

As a landowner living on the Lower San Antonio River near where it joins the Guadalupe River, Walter Womack has a special interest in preserving the river. In 2008 when he heard about a meeting to discuss the river, he knew he needed to attend.

What he found was a group of individuals—scientists, river authority staff, state water agency staff, and other stakeholders, including landowners like himself—passionate about the river and trying to keep it and its surroundings healthy.

This meeting and others like it are part of the Texas Instream Flow Program, mandated in 2001 by the Texas Legislature through Senate Bill 2 to study the state's rivers and streams.

The bill directs three of the state's water-related agencies—the Texas Commission on Environmental Quality (TCEQ), Texas Water Development Board (TWDB), and Texas Parks and Wildlife Department (TPWD)—to perform scientific and engineering studies to determine what makes a healthy environment for each river or stream and how much water should flow in each river or stream to ensure that healthy environment.

Paired with that program is the Environmental Flows Program outlined in Senate Bill 3 and passed by the Legislature in 2007, which created a process for the state to establish environmental flow standards for its river basin and bay systems.

Both programs have a common goal: to support a sound ecological environment. According to a Texas Instream Flow Program document, a sound ecological environment is "a resilient, functioning ecosystem characterized by intact, natural processes and a balanced, integrated, and adaptive community of organisms comparable to that of the natural habitat of a region."

To find out what is needed to have this kind of environment, the Senate Bill 2 program is looking at instream flows or the amounts of water in a river system, measured by the volume of water in a given river channel in a specified amount of time. The Environmental Flows Program is considering both instream flows and freshwater flows into the bays and estuaries.

Listening to Stakeholders

For the Texas Instream Flow Program, the agencies first identified six priority river subbasins to study, based on impending water rights permits or water development projects, said Dr. Mark Wentzel, hydrologist with TWDB's surface water resources division. Of those, the program is currently studying four subbasins—the Lower San Antonio, the Middle and Lower Brazos, and the Lower Sabine River, with the Middle Trinity and the Lower Guadalupe studies coming later.

Because local stakeholders' participation and input is vital to the success of the instream flow program, agency officials said the next step was to conduct public meetings in the different subbasins, such as the one landowner Womack attended.

Chris Loft, TCEQ's resource protection team leader, said at these initial public meetings the agencies' staff asked questions such as: How do people look at the river? What do they enjoy about it? What do they like to see?

The values voiced at the public stakeholder meetings, said Dakus Geeslin, aquatic scientist and TCEQ's lead for the instream flow program, are being used to help formulate the goals, objectives, and indicators for the planned technical studies.

The goals and objectives can be as simple as having high water quality or plenty of water for fishing to more complicated values, Geeslin said. "For example, an objective might be to maintain high water quality, so the indicator could be monitoring water temperature or dissolved oxygen, which are both key components to water quality," he said.

Loft said having stakeholder participation "really increases public confidence in both the science and, ultimately, the recommendations" from the studies.

Studying Instream Flows

The Texas Instream Flow Program is conducting multiyear, multidisciplinary studies that include the five riverine components: hydrology, biology, geomorphology, water quality, and connectivity. The studies will assess how water flow affects river characteristics, such as aquatic life and habitat, water quality, movement of nutrients and organisms, stream channel formation, and relationships between rivers and surrounding habitats, according to program documents.

These studies are being conducted not only by the three agencies but also by outside consultants and university researchers. The program is also using past studies to help in establishing the inflow needs. (See related story, page 5.)

After the studies are completed for each subbasin, the agencies will prepare a final study report that will include instream flow recommendations for subsistence flows, base flows, high flow pulses, and overbank flows. The report also will describe the significance of each flow component for the specific river subbasin and fully document study methods and analysis techniques, Geeslin said.

All studies and reports of the priority basins must be complete by 2016, as set forth by the Legislature.

Establishing Environmental Flows

The Texas Instream Program, however, stops short of providing a process to implement any flow recommendations into water permitting.

Enter Senate Bill 3 that established a process for developing environmental flow regimes and standards for all the river basins and bays in Texas, not just the subbasins of the instream flow program.

The bill established a nine-member Environmental Flows Advisory Group, composed of state representatives, senators, and representatives from TPWD, TWDB, and TCEQ. Assisting this group is a nine-member Science Advisory Committee.

As outlined in the bill, the program is currently tackling two river basins: the Trinity and San Jacinto Rivers and their associated bays, and the Sabine and Neches Rivers and their bays. The next group of basins is the Colorado/Lavaca and the Guadalupe/San Antonio, then the Nueces, Rio Grande, and Brazos.

As each of these basins is studied, the advisory group appoints 17 stakeholders to serve on individual Basin and Bay Area Stakeholder ⇨

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Committees. The bill outlined the specific categories of stakeholders that must serve on the committees. The stakeholder groups, in turn, establish the Bay and Basin Expert Science Teams (BBESTs), which are composed of scientists, engineers, river authority staff, and other water experts.

Each science team is examining the best science available to come up with recommendations for a specific environmental flow regime for its river basin, said Cory Horan, TCEQ's environmental flows program coordinator. These regimes will describe the quantity, frequency, timing, and duration of water flows required to maintain a sound ecological environment.

Each BBEST's flow regime recommendations, which are based only on science without regard to other water use needs, are passed on to the stakeholder committee, which considers other relevant factors such as water demands, economics, human needs, and other competing needs to determine the environmental flow recommendations for the specific river basin-bay system, Horan said.

The Environmental Flows Advisory Group, with input from the Science Advisory Committee, will review the environmental flow analysis and environmental flow regime recommendations submitted by each basin and bay expert science team, and provide comments, if appropriate, to the commission, he said.

Recommending "Set Asides"

TCEQ will use these recommendations to adopt environmental flow standards or "set asides" to be used in its rule-making process for new and amended water right applications. Each new permit will have to set aside unappropriated water, if available, to meet the environmental flow regime.

Senate Bill 3 prohibits TCEQ from issuing a new permit specifically for instream flows. Based on 2003 legislation, however, the commission may approve an application to amend an existing permit for environmental flows, said Kellye Rila, TCEQ's water rights permitting and availability section manager.

With a short timeline, environmental flow regimes and standards for the first tier of river basins should be complete by June 2011.

Although environmental flows recommendations developed from Senate Bill 3 will be implemented before the Texas Instream Flow Program studies are finished, legislators put an adaptive management component into the Environmental Flows Program to allow results from those studies to be incorporated into the environmental flows process, Horan said. Flow regime recommendations must be revisited at least every 10 years.

Protecting Water for Texas' Future

The results of the two programs are still yet to be seen, but for now, those involved seem positive about Texas' holistic, statewide approach to protecting its waters.

"A lot of people are under the impression in Texas when they look at the landscape and see healthy rivers and streams that there is not cause for concern," said Cindy Loeffler, TPWD's water resources branch manager. "But in 2002 when the Rio Grande stopped flowing, I think it opened up people's eyes that … it was time to take the issue up and deal with it.

"I feel like we have evolved in the process now where many more stakeholders, entities, and others interested are involved," she said. "I think what we will come up with in the end is a better, more lasting solution to the problem."

For landowner Womack, he plans to stay involved and hopes to serve on Senate Bill 3's San Antonio River stakeholder group when it is formed.

"I have a responsibility for this piece of land that has been in my family for a number of generations," he said. "I operate on the premise that, as a landowner fulfilling that responsibility, one of the greatest factors is water. That is what keeps me involved."